

**730.1 DESCRIPTION**

This work consists of preparing a seedbed and furnishing and planting seed on disturbed areas, except roadbeds, within the limits of the work.

**730.2 MATERIALS**

- A. General:** The seed shall comply with the requirements of the South Dakota Seed Law.
- B. Origin Limitations:** Seed furnished shall have been grown in South Dakota, North Dakota, Montana, Wyoming, Nebraska, Iowa, or Minnesota. Seed grown outside this area may be approved after the Contractor has furnished written certification from three seed suppliers confirming that seed grown within this area is not readily available.
- C. Seed Testing:** Seed shall be tested within 9 months prior to planting, exclusive of the calendar month in which the test was completed. Testing shall be performed by a State Seed Lab, Commercial Seed Testing Lab, or a registered member of the Society of Commercial Seed Analysts (Registered Seed Technologist). A certified test report shall be furnished prior to the start of seeding operations. If the seed is not planted within the 9 month period, the Contractor shall have the seed retested (as described above) for noxious weed seed, dormant seed, hard seed and germination and a new certified test report shall be furnished prior to starting seeding operations. The retest will be based on a sample obtained from the seed out of compliance. A certified test report will not be required on projects where the plans quantity of seed is 100 pounds (45 kilograms) or less.
- D. Labeling:** Each bag of seed delivered to the project shall bear a tag which shows the following information:
1. Name and address of supplier.
  2. County and project number for which seed is to be used.
  3. Suppliers lot number for each kind of seed in the mixture.
  4. Origin (where grown) for each kind of seed.
  5. Purity, germination, and other information required by South Dakota Seed Law, for each kind of seed.
  6. Pounds (kilograms) of bulk seed of each kind of seed in each bag.
  7. Total pounds (kilograms) of bulk seed mixture in each bag.
  8. Pounds (kilograms) of pure live seed (PLS) of each kind of seed in each bag.
  9. Total pounds (kilograms) of PLS mixture in each bag.

**10. Dormant Seed and Hard Seed.**

When bulk seed is referred to, it is defined as total seed, including PLS, inert matter, crop seed, and weed seed.

- E. Inoculation of Legumes:** Prior to seeding, legumes (alfalfa, clovers, etc.) shall be inoculated with fresh culture of the appropriate nitrogen fixing bacteria in accordance with instruction accompanying the inoculant. A certification of the inoculation shall be furnished.

**730.3 CONSTRUCTION REQUIREMENTS**

- A. General Requirements:** Within seasonal limitations, seeding shall be done as soon as finish grading and topsoiling on each section have been completed.

Seeding or related work shall not be done when the ground is frozen or the condition of the soil is such that a satisfactory seedbed or uniform seed placement cannot be obtained. Seed shall not be sown, when the wind interferes with uniform seed application, or on areas under water.

Slopes shall be worked longitudinally, on contour, during the preparation of areas, drilling, and after seeding.

Fertilizing and mulching shall be provided as specified in Sections 731 and 732.

The Engineer may approve necessary adjustments in the requirements outlined to obtain the most satisfactory results under varying conditions.

- B. Seasonal Limitations:** Permanent seeding shall not be done between June 1 and August 1, without written authorization from the Region Engineer.

- C. Application Rate:** The seed mixture shall be applied at the plan specified rate of pounds of PLS per acre (kilograms of PLS per hectare). If a retest of the seed mixture shows a reduction in PLS, adjustment of the seed mixture rate will not be made. Measurement will be reduced as set forth in Section 730.4.

The Contractor will be required to calibrate the drill or hydroseeder on each project. Calibration runs may be performed on areas to be seeded.

- D. Cover Crop Seeding:** When specified in the plans or directed by the Engineer, cover crop shall be seeded on both sides of the roadway for the entire length of the project. The area on each side of the roadway is 16 feet (5 meters) wide directly adjacent to the subgrade shoulder along the inslope. Exception to the cover crop seeding may include areas where curb and gutter will be placed and areas as determined by the Engineer.

Cover crop seed shall consist of 56 pounds (26 kg) of oats or winter wheat (minimum 75% PLS) per acre.

Cover crop seeding may be done at any time when the soil and weather conditions are suitable, as determined by the Engineer. Oats shall be used April through July and winter wheat shall be used August through November.

#### **E. Equipment and Methods:**

- 1. Seedbed Preparation:** Initial preparation of newly graded areas for seeding shall be worked to a depth of approximately 3 inches (75 mm). Every effort shall be made to obtain this depth on the first pass with tillage equipment. The implement used shall be a tool carrier with rigid shanks with sweeps or chisels, or a heavy duty disk as appropriate to the conditions. The implement shall have positive means of controlling depth of penetration.

Lumps or clods exposed by the initial pass of tillage equipment over 3 inches (75 mm) in diameter shall be broken up. The number of additional passes required to break up lumps or clods shall be kept to a minimum. Working the soil to a fine pulverized condition shall be avoided. The final prepared seedbed shall be left in a roughened condition consisting mainly of lumps two to three inches (50 mm to 75 mm) in diameter, for maximum resistance to erosion.

After seedbed preparation has been completed, the Contractor shall pick up and dispose of all loose stones or boulders having a vertical projection of 3 inches (75 mm) or more above the soil surface. Surface areas that are to be seeded with a Kentucky Bluegrass mixture shall be constructed to the required cross section and contour and shall be smooth, uniform and free from stones, roots and other undesirable material. Logs, stumps, brush, weeds, cobbles, or other foreign material which interferes with the proper operation of drills or other implements shall be disposed of by the Contractor.

- 2. Reseeding of Previously Seeded Areas:** Existing vegetation and cover crop shall be preserved for mulch. The seed shall be drilled directly into existing cover if possible, or by mowing and disking to permit penetration of drill openers and placement of seed to the specified depth.
- 3. Drilling:** The specified seed mixture shall be uniformly drilled using a press drill equipped with individually mounted, adjustable, spring loaded, double disk furrow openers fitted with depth control bands or drums.

The depth control bands or drums shall be of a size to provide a final planting depth of  $\frac{3}{4}$  to 1 inch (20 mm to 25 mm) behind the press wheel.

The press drill shall be mounted on rear press wheels, which carry a major portion of the weight of the drill, and shall have no weight carrying wheels at the ends of the seedbox. The press wheels shall be mounted independently of the furrow openers. A press wheel shall follow directly behind each opener to compact the soil over the drill row.

Seeding may be done with drills other than press drills provided they are equipped with packer wheels which follow directly behind double disk furrow openers and provide compaction of the seeded drill rows similar to the compaction obtained by a press drill.

The seedbox shall be equipped with positive feed mechanisms which will accurately meter the seed, and agitators which will prevent bridging in the seedbox and keep the seed uniformly mixed during drilling. The drill shall conform to the following:

**a. Drill Width Maximums:**

- 1) Single units .....10 feet (3 meters)
- 2) Flex coupled side by side units..... 16 feet (5 meters)  
(max. two 8 foot (two 2.5 meter) members)
- 3) Max. drill row (openers) spacing.....8 inches (200 mm)

Each drill shall be equipped with a metering device which will measure the area covered by the drill.

Each drill shall be equipped with fabricated baffles or partitions mounted a maximum of two foot (600 mm) on centers and flush with the top of the seedbox and extending downward to within four inches (100 mm) of the bottom of the seedbox.

On areas where a press drill cannot be operated satisfactorily, hydraulic, cyclone or knapsack hand operated, or other broadcast type seeders may be used.

- 4. **Hydroseeding:** The equipment shall be designed specifically for hydroseeding or hydromulching application. The nozzle shall be adaptable to hydraulic seeding requirements. Storage tanks shall have a means of estimating the volume used or remaining in the tank.

**F. Care During Construction and Final Inspection:** Dirt ridges which result from seeding operations or from traffic shall be smoothed so they will not interfere with future mowing operations.

Following completion of seeding operations, foot, vehicular, or equipment traffic over the seeded area shall be avoided. Areas damaged from such traffic shall be reworked and reseeded.

Prior to acceptance of the project, any area on which the original seed has been lost or displaced shall be reseeded.

**G. Excluded Areas:** Certain areas outside the right-of-way widths which are devoted to cultivation, and undisturbed areas within the right-of-way widths which have a good growth of grass may be excluded from seeding operations.

**730.4 METHOD OF MEASUREMENT**

Permanent seed will be measured to the nearest pound (kilogram) of PLS furnished and planted. Unauthorized increases in the specified rate of seeding will not be measured for payment. Seed required for calibration of the drill will be measured. Reseeding of areas damaged from causes beyond the control of the Contractor will be measured and added to the original quantities used.

The weight of PLS is computed by multiplying the purity, times the sum of the germination and dormant seed value, times the weight of bulk seed applied. The purity, dormant seed, and germination values will be as shown on the bag tag. If the seed has been retested based on Section 730.2 C, the retested value will be used in determining PLS.

Cover crop seeding shall be measured per bushel. For purposes of measurement, one bushel of cover crop seed shall be considered to weigh 56 pounds regardless of whether oats or winter wheat is used.

### **730.5 BASIS OF PAYMENT**

Pure live seed will be paid for at the contract unit price per pound (kilogram) of permanent seed. Payment will be full compensation for the preparation of the seedbed, labor, tools, equipment, inoculant and its application, and incidentals necessary.

Cover crop seeding shall be paid for at the contract unit price per bushel.

**THIS PAGE INTENTIONALLY LEFT BLANK**